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THE FIRST AND ONLY

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Dear Sir:

An exchange of information, on the effects of atomic and hydrogen weapons on human beings and their environment, will shortly be made by the United States, Britain, and Canada. The exchange was framed by the USAEC; approval has been given by President Eisenhower and the Joint Congressional Committee on Atomic Energy. Chairman Lewis L. Strauss, USAEC, in discussing this exchange, observed that since 1948 a program of technical cooperation in certain atomic energy matters has existed between the United States, Canada, and Britain. Only recently, he said, has it been found possible, within existing authority, to extend the area of cooperation under this program in certain respects. This additional exchange does not involve weapons design and development, as the Atomic Energy Act (1946) forbids such an exchange.

A two year study of the feasibility of using atomic energy for the development of power in Ontario, Canada, is now to be undertaken. To finance the study, the Ontario Hydro-Electric Power System has set aside some $200,000. Dr. W. B. Lewis, vice-president in charge of research and development, Atomic Energy of Canada, Ltd., will be in charge of the Ontario project. Assisting him will be Dr. R. L. Hearn, Hydro general manager and chief engineer; Dr. Hearn is a member of the Canadian Atomic Energy Commission. (The study was motivated by concern for power in Ontario when the capacities of present and projected hydro and steam generated power supplies become inadequate.)

Eight fellowships in industrial medicine will be offered by the USAEC for the 1954-1955 academic year. The fellowship program, which began some 4-years ago, is designed to provide advanced training and on-the-job experience for physicians in the field of industrial medicine, particularly in relation to the atomic energy industry. These fellowships are open to United States citizens who hold M.D. degrees from approved medical schools, and who have had at least one year of internship. Awards are for one year's academic training at institutions offering approved graduate courses in industrial medicine which can provide special training facilities in the health problems associated with the atomic energy program. The second year training is in-plant work in the medical departments of major USAEC plants and laboratories. Applications and inquiries concerning these fellowships should be directed to Dr. Henry A. Blair, School of Medicine, University of Rochester, Rochester, N. Y.

The Administrator of Federal Civil Defense, Val Peterson, said in Washington last week that the United States is not adequately prepared to meet an atomic attack. He said that there are only a fraction of the number of volunteer workers that are needed, and that "certain attitudes" of Americans must be overcome before they can be adequately prepared. Mr. Peterson said one of these "attitudes" is the belief that with the hydrogen bomb and other weapons an attack would be so devastating that nothing could be done about it. He observed that, "to be completely candid, there is some truth behind this attitude."

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BUSINESS NEWS...in the nuclear field...

CONTRACTS AT OAK RIDGE AWARDED- Contracts have now been awarded to Burns & McDonnell Engineering Co., Kansas City, Mo., for the design of a new steam plant to replace an obsolete existing plant, in the Y-12 (electromagnetic separation plant) area at Oak Ridge, and to Catalytic Construction Co., Philadelphia, for design work in connection with the modification of certain existing buildings and facilities, in this area. The construction work on this project will be done by Rust Engineering Co., Pittsburgh. It includes some alterations in the structures, and installation of equipment for use in one of the USAEC's Oak Ridge programs.

FURTHER WORK AT PORTSMOUTH GASEOUS DIFFUSION PLANT- Union Carbide's subsidiary, Carbide & Carbon Chemicals Co., which holds the prime USAEC contract for construction of the new gaseous diffusion plant (to produce uranium-235) near Portsmouth, Ohio, has now secured USAEC approval for eleven subcontracts at this job. The subcontracts are for materials, as well as for construction work. The largest of these sub-contracts, for $1,159,061 was awarded Blaw-Knox, Pittsburgh, for prefabricated piping for a process building.

NUCLEAR ENERGY AS POWER SOURCE- Nuclear energy is no competitor to petroleum fuels, W. L. Davidson, director of the USAEC's office of industrial development recently told a session of the American Petroleum Institute, meeting in Chicago. The areas of competition between oil and nuclear energy are but academic today, Dr. Davidson told the session. He said that years of experimentation and experience will pass before concrete threats materialize. However, he pointed out, there are three areas where competition seems inevitable: In diesel-powered electric plants of 5000 to 25,000 kilowatts, which are remote from fuel supplies; in oil, gas, or coal-fired boilers used in central station power plants of over 100,000 kilowatts capacity; and in large ships or aircraft. And when competition does arrive, Davidson observed, nuclear energy and petroleum will maintain their complementary relationship.

RAW MATERIALS...radioactive minerals for nuclear energy purposes...

UNITED STATES- An indication of the accelerated pace of uranium mineral prospecting and mining in the United States is the $2,535,000 which, it has now been learned, has been paid as bonuses to uranium miners. These payments, are for uranium ores produced from eligible properties since the USAEC's bonus program for initial production went into effect March 1, 1951 and include the period since that date to November 6th, 1953. Bonus payments are now being made at the rate of approximately $125,000 per month; this program was recently extended through February 28th, 1957. These bonus payments double the base price for the first 10,000 pounds of contained uranium oxide produced and sold from any new property, and amount to a bonus of between $15,000 and $35,000, depending on grade, for first production from new properties. A total of 329 properties has been certified eligible for bonus payments, and a total of 1,626 individual payments has been made. So far, 43 new properties have produced more than the 10,000 pounds of uranium, and the operators have received the full benefit of this initial production bonus.

CANADA- Now showing signs of a large tonnage, major new uranium field for Canada is the Blind River-Espanola-Sudbury area, encompassing a belt of country extending for over 100-miles across the north shore of Lake Huron. Claims staked here number in the thousands; already there are some 20 diamond drills in operation in the area. Geologists working in the area feel that while the grade shown so far is not of the calibre of Canada's Great Bear or Athabaska deposits, the tonnage potential makes the area of much interest. It is felt also that the area may be worthwhile because of the fact that higher prices will be available for a high grade leached mill product. There is also the location of the area, which because of ready accessibility by road, rail and water should be conducive to low cost operations. Currently, the greatest concentration of activity is located in the Blind River section, where Peach Uranium made the initial discovery, setting off the entire intense activity. This was in Long Township, near the north shore of Lake Huron, where subsequent drilling indicates some 1,900,000 tons as estimated potential. Average uranium oxide content is said to average 0.14%. Since Peach's original find, a new company, Pronto Uranium Mines, has taken over the property.

NEW PRODUCTS, PROCESSES & SERVICES...in the nuclear field...

FROM THE MANUFACTURERS- Radioactivity absorber set, Model C-101, consists of 24 lead and aluminum discs mounted in uniform plastic rings. This absorber set may be used with a Geiger tube mount and a scaler or count-rate meter to determine the energies of photons and beta radiations, check isotope purity, identify radioactive species, study decay schemes, or to count one radioisotope in the presence of another. Each absorber is individually calibrated, and the complete set is housed in a walnut case. --Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

Double pulse generator, Model 4904, provides a source of single or paired pulses which may be used for laboratory testing of electronic pulse circuits such as counters, gates, switches, and amplifiers. This pulse generator consists of two basic pulse forming circuits which are triggered at a variable repetition rate either by an internal or an external frequency source, or by a manually operated switch. A time delay circuit provides the variable separation between the first and second output pulses. The output of each pulse forming circuit is obtained from a power amplifier which gives large output with small base-line variations. --Berkeley Scientific Div., Beckman Instruments, Inc., Richmond, Calif.

NOTES: A gauge utilizing beta rays from a radioactive source for gauging small diameter, thin walled tubing, with what is said to be extreme accuracy, and developed by Tracerlab, Inc., Boston nuclear instrument manufacturer, is now in operation at Knolls Atomic Power Laboratory, Schenectady. A source of beta radiation is moved inside the tube in relation to a sensitive means of detecting radiation on the outside of the tube. Changes in the thickness of the tube's wall affect the amount of radiation passing through the wall. These changes are translated into thickness readings, and shown by a pen trace on a recorder chart.

A new firm to handle radioactive waste has now been organized in Oakland, Calif.: Atomic Energy Waste Disposal Service. The company will handle contaminated liquids, solids, slurries, and equipment. Arrangements it makes are on a contract or purchase basis, and it is offering a nation-wide service.

Uses for radioisotopes were recently described by D. L. Tabern, Abbott Laboratories, and Charles Rosenblum, Merck & Co., who addressed a meeting of the American Drug Manufacturer's Association's research and development section, at Rye, N.Y. Abbott has found, Tabern stated, that its new sweetening agent, Sucaryl, is excreted rapidly and completely without change by humans and animals; this investigation used Sucaryl tagged with a radioisotope. He mentioned also that radioactive gold has been effective as a palliative in treating fluid accumulations connected with lymphoid cancer. Dr. Rosenblum pointed out that Merck have found radioisotopes of value in studying vitamin B-12 including its metabolism, its stability in multivitamin mixtures, and its assay.

Investigations at the University of Southern Calif., with laboratory animals, indicate that linoleic acid may afford some measure of protection against the damage of ionizing radiation. Rats were given small daily doses of linoleic acid, in the experiments, and exposed to X-rays. While the average survival time for the control group was 53 days, the animals given the linoleic acid survived an average of 74 days. The experimenters also believe, from the data of these experiments, that the protective effect of the linoleic acid is cumulative.

Although the USAEC's Isotopes Div., at Oak Ridge has made polonium available as a plated alpha source, and as a polonium-beryllium neutron source, it is now making polonium nitrate available in quantities up to 20 mc. The material is to be prepared by evaporating a small amount of polonium nitrate into a glass vialand sealing the vial in a glass tube. It is also making large polonium-beryllium sources available. Such availability now extends the original standard limit, of 5-curie sources, and makes sources of 11 curies, or higher, available upon special order.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Status Report on Standardization of Radionuclides in the United States. Prepared by G.G. Manov, the report was sponsored by the subcommittee on beta and gamma ray measurements and standards of the National Research Council. It presents techniques on the standardization of radionuclides, availability of certain standards, and information concerning their accuracy. (Publication No. 270; nuclear science series preliminary report No. 13) --National Research Council, National Academy of Sciences, Washington, D. C. (n/c)

Technical Reports: A listing of those in the Metallurgical & Ceramics Field. A new series prepared by the USAEC, of which this is the first selection, consisting of abstracts or listings selected from nearly 9,000 technical reports. --Industrial Information Branch, USAEC, Washington 25, D. C. (n/c)

Heat Transfer from Stainless Steel Tube, by W. E. Simmons. (65¢). Liquid Metal Pumps for Laboratory Use, by D. A. Watt. $1.25. Results of research conducted at Atomic Energy Research Establishment, Harwell, England. --British Information Services, New York 20, N.Y.

Upper Atmosphere Research Report No. VII; Counting With Geiger Counters, by H. E. Newell, Jr., and Eleanor C. Pressly. Work done at U. S. Naval Research Laboratory. --Library of Congress, Publication Board Proj., Washington 25, D. C. (Microfilm: $1.75. Photostat: $2.50)

AT ORGANIZATION MEETINGS...reports on nuclear subjects...

American Society of Agronomy, meeting in Dallas, Texas last fortnight: Apparent resistance to rust, in a single susceptible variety of oats, has been produced through changes induced by exposure of oat seeds to ionizing radiation, Calvin F. Konzak, Brookhaven National Laboratory, told this Society recently. Dr. Konzak, who is Brookhaven biologist, exposed several hundred oat seeds of the Mohawk variety in the Brookhaven nuclear reactor for periods up to 8-hours. Subsequently, these seeds were planted near Aberdeen, Idaho, where soil and climatic conditions favor the Mohawk strain. Now, he said, resistance seems to have been induced while retaining the desirable characteristics of this strain. Further work is being done on the genetic nature of these radiation-induced mutations.

Electronic Instrumentation & Nucleonics in Medicine, meeting in New York in last fortnight: The use of arsenic-74 to detect cranial tumors was described at this Conference by Gordon L. Brownell, and William H. Sweet, Massachusetts General Hospital, Boston. Dr. Brownell showed pictures of the head of a patient who had undergone an operation for brain tumor, and subsequently had entered the hospital for cranial repair. Using this radioisotope technique, with detection apparatus, it was found that the tumor had recurred. Dr. Brownell pointed out that in this case the "data were of crucial value in the management of the patient, because there were neither clinical symptoms nor signs of the intercranial recurrence of the tumor." He said that had this diagnostic study been omitted, the additional tumor might have been overlooked. Dr. Brownell noted that a sufficient number of patients have been scanned to indicate that "this technique will have a valuable role in neurological examinations."

American Association of Land Grant Colleges & Universities, meeting in Columbus, Ohio, last month: Lewis L. Strauss, Chairman, USAEC, told this meeting recently that surveys made by the USAEC show that the energy potential of fissionable material in sight is at least 23 times that which can be hoped for from existing reserves of conventional sources of energy. He noted that useful (though not yet economical) power is being produced daily in two of the USAEC's experimental nuclear reactors, at Arco, Idaho. And, he observed, the land-based prototype of a nuclear-powered submarine has been in successful test operation since last March. For this reason, he stated, it is not surprising that private enterprise is now fully alert to the possibilities of utilizing this new source of energy. The problem now, he explained, is primarily an engineering one, just as the continued improvement of the energy conversion of conventional fuels is an engineering problem. The policy of the USAEC, concerning power, Mr. Strauss said, is that it shall get a priority second only to defense needs; however the primary obligation of the USAEC is atomic weapons, he stated.

ATOMIC PATENT DIGEST...latest U. S. grants in the nuclear field...

Improved comparative densitometer for indicating the standard relative density of a pair of objects. Comprises (in part) an X-ray source emitting a substantially mono-energetic beam of X-rays directed upon these objects, with an interrupter located intermediate the source and the objects. A radiation detector is located on the opposite side of these objects from the source, and in alignment with it. The radiation detector has controlled amplification, and an output, a first gate circuit having an input, and an output with the input thereof connected to the output of the radiation detector. Through additional circuitry, the radiation detector is controlled to produce at the output thereof a signal of constant amplitude for incident X-rays transmitted through one of these objects. U.S. Pat. No. 2,659,012 issued Nov. 10th, 1953; assigned to United States of America (USAEC). (Inventors: Robert Bromberg, and William L. Martin.)

Badge dosimeter for estimating the amount of radiation dosage to which a wearer has been exposed, with provision for identifying the wearer. Comprises (in part) a first sheet of film particularly sensitive to gamma rays of a selected energy range; a second sheet of film sensitive to gamma rays of energy outside the selected energy range; and a third sheet of film sensitive to neutrons. A fourth sheet of film carries a photograph of the wearer, is inscribed with identifying characters, and is pervious to gamma rays. A fifth sheet of film has several apertures and is pervious to gamma rays. A tray, having several apertures corresponding with those of the fifth sheet, is adapted to receive the five sheets of film, while one support member, removably attached to the tray, can hold an indicating radiation monitor. U. S. Pat. No. 2,659,013 issued Nov. 10th, 1953; assigned to United States of America (USAEC). (Inventors: Doyle M. Davis, and James C. Hart.)

Radioactivity well logging system. Comprises (in part) a subsurface unit, a cable having at least one insulated conductor for lowering the unit into a borehole. Two radiation detectors are included in this unit, producing signals in response to radiations coming into the units. Means including two mutually non-interfering self-balancing follow-up systems transmit over a conductor of the cable information representative of these signals. Simultaneously, a log at the earth's surface of the activity of the two radiation detectors is made. U. S. Pat. No. 2,659,014 issued Nov. 10th, 1953; assigned to Perforating Guns Atlas Corp., Houston, Texas. (Inventor: Serge A. Scherbatskoy.)

Ray directing device for X-rays and the like. Comprises (in part) a pair of spaced supports relatively movable toward and away from each other, and longitudinally extensible and contractible ray transmissive elements extending between these supports. Each element has ridges on its outer surface to prevent transmission of secondary X-rays. These elements are recessed at their entrance ends to receive radioactive elements. U. S. Pat. No. 2,659,017 issued Nov. 10th, 1953; assigned to Bartow Beacons, Inc., Blue Bell, Pa. (Inventor: John B. Bartow.)

An integrating accelerometer. Comprises (in part) a casing, and a pair of bellows in the casing, with an imperforate wall member common to each of these bellows and dividing one from the other. A second pair of bellows is located at an angle to the first pair. Conduits connect one bellows of the first pair, with one bellows of the second pair, while means are operatively connected with one of the wall members for indicating movement of it. U. S. Pat. No. 2,659,589 issued Nov. 17th, 1953; assigned to United States of America (USAEC). (Inventor: Clarence N. Hickman.)

An isotope separation system. Comprises (in part) an ion source, means for selectively deflecting ions of different masses, collectors for these ions, and means for decelerating the ions for accentuating their deflection while travelling through the space to the collectors. U. S. Pat. No. 2,659,822 issued Nov. 17th, 1953; assigned to United States of America (USAEC). (Inventor: George H. Lee.)

Sincerely,

The Staff,
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